PS2: 39

Fungal biofilms in a Brazilian water distribution system including bacteria and algae

Virginia Medeiros Siqueira[1], Helena Oliveira[2], Cledir Santos[1], Robert Paterson[1], Norma Gusmão[2], Nelson Lima[1]

[1]IBB-Institute for Biotechnology and Bioengineering, Centre of Biological Engineering, University of Minho, Braga, Portugal; [2]Department of Antibiotics, Federal University of Pernambuco, Recife, Brazil

Filamentous fungi in drinking water are associated with blockage of water pipes, organoleptic biodeterioration, and contributing pathogenic and/or mycotoxigenic species. Consequently, there is loss of water quality. The contribution of filamentous fungi to biofilms is underreported, despite an increasing numbers of studies concerning the organisms from potable water. This study presents a sampling device that can be inserted directly into pipes within water distribution systems (WDS), hence exposing biofilms to conditions experienced *in situ*. Calcofluor White M2R staining and fluorescent *in situ* hybridization with morphological analyses using epifluorescence microscopy, was used for fungal biofilm analysis. DAPI was also applied for bacterial observation. Filamentous fungal in biofilms were detected predominantly after 6 months on coupons exposed to raw, decanted water and at the entrance of the water distribution system. Algae, yeast and bacteria were also observed representing a high biodiversity. The use of samplers which allowed analyses of coupons in situ is a useful innovation when studying biofilms. CW was a rapid and efficient stain to detect fungi and filamentous fungi which could be differentiated by well-known morphologies. FISH allowed the detection of specific group of eukaryotic microorganism and fungi, and hence confirming their presence. Fungi are likely to play an important role in microbial interactions within water biofilms and consequently in microbial water quality.